

REMARKS

The Office Action of March 30, 2007 has been reviewed and the Examiner's comments carefully considered. The present Amendment amends claims 10, 11, 13, 14, 16 and 17 and the specification, all in accordance with the originally-filed specification. No new matter has been added. Accordingly, claims 10-18 are currently pending in this application, and claim 10 is in independent form.

Specification Objection

The Examiner has objected to the specification for minor informalities because the term "SOI" used throughout the specification has not been properly defined therein. The Applicants believe that the above amendments to the specification overcome the Examiner's informality objection. Reconsideration and withdrawal of this objection are respectfully requested.

Claim Objections

Claims 13, 14 and 16-17 stand objected to for informalities because the term single crystal silicon on insulator needs to be inserted before "SOI" in these claims. The Applicants believe that the above amendments to claims 13, 14, 16 and 17 overcome the Examiner's informality objections. Reconsideration and withdrawal of these objections are respectfully requested.

35 U.S.C. §103 Rejections

Claims 10-18 stand rejected under 35 U.S.C. §103(a) for obviousness based upon United States Patent No. 5,452,268 to Bernstein (hereinafter "the Bernstein patent"). In view of the above amendments and the following remarks, the Applicants respectfully request reconsideration of these rejections.

As defined by amended independent claim 10, the present invention is directed to a sound detecting mechanism comprising a pair of electrodes forming a capacitor on a substrate in which one of the electrodes is a back electrode forming perforations therein corresponding to acoustic holes and the other of the electrodes is a diaphragm. A multilayered assembly is mounted on the substrate. The multilayered assembly is formed of

the diaphragm, a sacrificial layer and the back electrode superposed in series by vapor deposition technique. The sacrificial layer is etched relative to the multilayered assembly formed of the diaphragm, the sacrificial layer and the back electrode, thereby defining a void area between the diaphragm and the back electrode with the sacrificial layer remaining at outer peripheral portions of the void area. The back electrode is formed by polycrystal silicon of $5\mu\text{m}$ to $20\mu\text{m}$ in thickness.

According to the claimed invention, the diaphragm, the sacrificial layer and the back electrode are formed as a single multilayered assembly by a vapor deposition technique. Therefore, the bonding conditions between these films are very firm and strong. Furthermore, while such strong bonding conditions are maintained, the sacrificial layer is etched to form a void area between the diaphragm and the back electrode, with the sacrificial layer remaining at the outer peripheral portions of the void area. Therefore, after the completion of the inventive sound detecting mechanism, the strong bonding is maintained with the sacrificial layer being sandwiched between the diaphragm and the back electrode. As a result, even if the diaphragm is formed relatively thin, this diaphragm can be firmly fixed by the vapor deposition fixation relative to the sacrificial layer and the back electrode. Hence, a sound detecting mechanism having high sensitivity can be easily obtained. Additionally, since the back electrode is formed of polycrystal silicon having a thickness of $5\mu\text{m}$ to $20\mu\text{m}$, the thin diaphragm can be firmly fixed to the thick back electrode via the sacrificial layer.

Support for the amendments to independent claim 10 can be specifically found in paragraphs [0031], [0032], [0034], [0035] and Figs. 1-3 of the specification as originally filed. No new matter has been added.

The Bernstein patent is directed to an acoustic transducer with acoustic transducer (10) comprising a perforated member (12) having perforations (13). The perforated member (12) is mounted to an insulating layer (14). The acoustic transducer (10) also includes a diaphragm (16) mounted to substrate (18) (see Fig. 1). The diaphragm (16) and perforated member (12) may be made from material from the group consisting of gold, nickel, copper, iron, silicon, polycrystalline silicon, silicon dioxide, silicon nitride, silicon carbide, titanium, chromium, platinum, palladium, aluminum and their alloys (see column 2, lines 57-62).

The Bernstein patent does not teach or suggest a sacrificial layer as required by amended independent claim 10. The spacing between the back electrode (i.e., perforated member (12)) and the vibrating plate (i.e., diaphragm (16)) is maintained by bending the back electrode (12) away from the vibrating plate (16) as illustrated in Fig. 1. Accordingly, the device in the Bernstein patent does not require a sacrificial layer and does not teach or suggest such a layer.

Additionally, the Bernstein patent fails to teach or suggest a multilayered assembly mounted on the substrate and formed of the diaphragm, a sacrificial layer and the back electrode superposed in series, by vapor deposition technique as required by independent claim 10. Instead, the diaphragm (16) of the Bernstein patent is separated from the substrate (18) and the back electrode (12) by means of springs (54, 56, 58 and 60) (see Fig. 3), instead of being formed as a multilayered assembly as required by amended independent claim 10.

When evaluating a claim for determining the question of obviousness, all of the limitations of the claim must be evaluated. Where claimed limitations are simply not present in the prior art, a *prima facie* obviousness rejection is not supported. Accordingly, since the Bernstein patent fails to teach or suggest several limitations of independent claim 10 as discussed above, a *prima facie* case of obviousness has not been established.

For the foregoing reasons, the Applicants believe that the subject matter of amended independent claim 10 is not rendered obvious by the Bernstein patent. Reconsideration of the rejection of claim 10 is respectfully requested.

Claims 11-18 depend from and add further limitations to amended independent claim 10, or a subsequent dependent claim and are believed to be patentable for the reasons discussed hereinabove in connection with amended independent claim 10. Reconsideration of the rejection of claims 11-18 is respectfully requested.

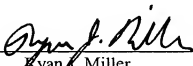
Conclusion

Based on the foregoing amendments and remarks, reconsideration of the rejections and allowance of pending claims 10-18 are respectfully requested.

Respectfully submitted,

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